

Remarks

The present Amendment is in response to the Office Action mailed on March 9, 2006. A petition and fee for a one-month extension of the three-month shortened statutory period for response effectively extending the deadline to July 10, 2006 are enclosed. The Office Action rejected claims 1, 3, 6, 7, 9-13, 15 and 18-22 under 35 U.S.C. § 103(a) as assertedly being obvious over the Miles et al., U.S. Patent No. 6,384,463 ("Miles") and the Keri U.S. Patent No. 5,861,656 ("Keri"). The Office Action also made reference in the rejection to the Hastings et al., U.S. Patent No. 5,673,172 ("Hastings"). This rejection presumably also applies to pending claims 8 and 14. Claims 2, 4, 5, 16 and 17 were previously cancelled. Claims 1, 3, 6-15 and 18-22 are presently pending.

The Rejection Under 35 U.S.C. § 103(a)

Claims 1, 3, 6-15 and 18-22 stand rejected under 35 U.S.C. § 103(a) as assertedly being obvious over Miles in view of Keri. Applicants respectfully traverse this rejection and request that it now be withdrawn, in view of the previously-filed Declaration Under 37 C.F.R. §1.132 and in view of the discussion below.

## **SUMMARY**

### ***A. As applied in the Office Action, Miles and Keri Do Not Make Independent Claim 1 or 14***

#### ***Obvious***

The portions of Miles and Keri specifically relied on by the Office Action teach shielding from static electric fields. These portions of each of Miles and Keri disclose a guard ring configured to provide shielding from static electric fields. The Office Action has not pointed to any portion of either of these references that discloses a guard ring configured to dissipate high frequency electromagnetic fields.

Miles' and Keri's electrical conductors are not absorbers of high frequency electromagnetic fields. Miles discloses a guard ring made of a conductor that may be a "metal", polysilicon, or an equivalent material. Keri discloses a grounded conductor made of "metal". Miles' and Keri's guard rings would be expected to be made of good electrical conductors that reflect high frequency electromagnetic fields rather than absorb them for dissipation.

Independent Claims 1 and 14 are Unobvious. The portions of Miles and Keri specifically pointed to by the Office Action, taken separately or together, fail to disclose and fail to suggest a semiconductor absorber and dissipative conductor combination that is configured to dissipate electromagnetic radiation having a center frequency within a range of between about 1 gigahertz and about 1,000 gigahertz, as recited in independent claims 1 and 14.

***B. As applied in the Office Action, Hastings Does Not Make Independent Claim 1 or 14***

***Obvious***

As applied in the Office Action, the Hastings Patent Doesn't Remedy Defects. The newly-cited Hastings patent discloses hard disk drives. The Office Action has not pointed to any portion of Hastings disclosing a disk drive located over first and second regions of an insulating substrate separated by a doped semiconductor absorber as defined in the pending claims. Instead, the cited portions of Hastings disclose disk drives "enclosed" by the conductor. Also, there is no showing that Hastings is combinable with Miles and/or Keri, nor any showing of a motivation to do so.

***C. Functional Limitations Defining Structure in Apparatus Claims Are Permitted***

Apparatus Claims May Include Functional Limitations. The features of an apparatus may be recited either structurally or functionally in the claims. Features that are defined functionally must be given weight when considering the patentability of an apparatus.

No Substantive Rebuttal of Unobviousness Presented. The previously filed Declaration Under 37 C.F.R. §1.132 presented proof that the devices disclosed by Miles and Keri are not inherently configured to perform the function of the semiconductor absorber and dissipative conductor combinations as recited in independent claims 1 and 14. The Declaration also presented evidence that the portions of Miles and Keri pointed to by the Office Action fail to disclose or suggest the corresponding material composition of the dissipative conductor as

defined in independent claims 1 and 14. The Office Action offers no substantive rebuttal to that proof.

IPXL Case Irrelevant. The CAFC decision in IPXL Holdings LLC v. Amazon.com Inc. is irrelevant and is mischaracterized by the Office Action. The quoted language relates to an apparatus claim that included method limitations. That is not the case here.

## DISCUSSION

Miles. Miles discloses a high voltage guard ring for protecting a sensitive low voltage area from a high voltage area on the same integrated circuit. Miles, col. 1, lines 10-12; and col. 2, lines 31-34. FIGS. 2 and 3 show a metal guard ring 6, beneath which there is a silicon guard ring 8. Miles discloses that the metal guard ring 6 and silicon guard ring 8 are electrically connected together and are also connected to a low impedance voltage source, or ground. Miles, col. 2, line 32- col. 3, line 25; col. 1, lines 36-47. Miles further teaches that the “metal” guard ring could be replaced by other equivalent substitutes, e.g. an alternative conductor such as polysilicon. Miles, col. 4, lines 1-6. Referring to FIGS. 1 and 3, Miles discloses that if high voltages in the high voltage area 3 of the integrated circuit cause high energy particles to migrate across the surface of the device towards the low voltage area, they are attracted to the metal guard ring 6 and their charge is conducted to ground to prevent them from moving into the low voltage area. Miles, col. 3, lines 25-36.

Keri. Keri discloses a grounded metal conductor 30 shown in FIGS. 5 and 6 which surrounds almost a whole integrated circuit chip and at several locations extends inwardly from its circumference. Keri teaches that by opening up the passivation 18 above metal conductors 30

and 32 that are connected to ground or potential near ground as compared to applied voltage, the charging of the passivating surface can be prevented or delayed. Keri also discloses that the non-passivated metal that extends from the circumference of the chip forms a sort of channel/trap for charge carriers that are transported on the passivating surface. Keri, col. 2, line 66 – col. 3, line 12.

The Declaration Under 37 C.F.R. § 1.132. In the Declaration as submitted with the Amendment filed on November 28, 2005, Dr. Vincent E. Houtsma declared that each of Miles and Keri discloses guard rings configured to provide shielding from static electric fields rather than configured to dissipate high frequency electromagnetic fields. Dr. Houtsma further stated that based on his scientific experience it does not necessarily follow that a guard ring configured to provide static shielding as in Miles and Keri would significantly dissipate incident electromagnetic radiation in the frequency range of about 1 gigahertz and about 1,000 gigahertz. He also declared that a guard ring configured to dissipate electromagnetic radiation in the 1-1,000 gigahertz frequency range would have to be made of a material with a resistivity higher than typically desired in guard rings for shielding of static electric fields.

Miles and Keri. The portions of Miles and Keri pointed to by the Office Action fail to disclose and fail to suggest a semiconductor absorber and dissipative conductor combination as recited in independent claims 1 and 14 which is configured to dissipate electromagnetic radiation having a center frequency within a range of between about 1 gigahertz and about 1,000 gigahertz. Claims 3, 6-13 and 21 depend from claim 1; and claims 15, 18-20 and 22 depend from claim 14. Miles discloses a conductive guard ring formed from metal, polysilicon or an equivalent conductor. The conductive guard ring is interposed between low and high voltage areas of an

integrated circuit. The conductive guard ring protects the low voltage area from the high voltage area by attracting high energy particles that escape from the high voltage area, and conducting the electric charge of such high energy particles to ground. The function of Miles' conductive guard ring is to provide shielding from static electric fields. Keri discloses grounded metal conductors 30 and 32 that form a sort of channel/trap for charge carriers that are transported on a passivating surface. The function of Keri's grounded metal conductors is to provide shielding from static electric fields.

Hastings Patent As Applied in the Office Action Doesn't Remedy Defects. The newly-cited Hastings patent, which is apparently also being applied as grounds for the rejection of the claims under 35 U.S.C. §103(a), discloses hard disk drives that are shielded by a conductor from both static electric fields and electromagnetic fields. Hastings, col. 2, lines 22-37; col. 4, lines 30-37; col. 5, lines 1-67. The Office Action has not pointed to any portion of Hastings in which a disk drive is located over first and second regions of an insulating substrate separated by a doped semiconductor absorber as defined in the pending claims. Contrary to the Office Action's assertion at page 9, the cited portions of Hastings do not teach that an absorber configured to provide static shielding would also dissipate electromagnetic radiation as recited in independent claims 1 and 14. Instead, at col. 2, lines 29 and 30 for example, Hastings teaches that electromagnetic interference and electrostatic discharges cannot penetrate "an enclosure made of an electrically conductive material." The portions of Hastings to which the Office Action has pointed, disclose an electrically conductive enclosure – not an absorber as defined in claims 1 and 14, nor a guard ring as disclosed in Miles, nor a grounded metal conductor as disclosed in Keri.

Also, there is no motivation to combine Hastings with Miles or Keri other than Applicants' own disclosure. In particular, there is no showing in the Office Action of why one of ordinary skill in the art would combine Hastings' disk drive shields with Miles' or Keri's semiconductor devices. Hastings accordingly is not combinable with Miles and/or Keri to transform their conductive metal or polysilicon static electric field shields into shields formed of a composition that is not a conductive metal and that is functionally capable of absorbing high frequency electromagnetic radiation.

The functional limitations in claims 1 and 14 serve to permissibly define claim elements.

Each of the pending independent claims 1 and 14 recites in part that:

...said semiconductor absorber and dissipative conductor are configured to dissipate electromagnetic radiation having a center frequency within a range of between about 1 gigahertz and about 1,000 gigahertz.

The features of an apparatus may be recited either structurally or functionally in the claims. Manual of Patent Examining Procedure ("MPEP"), §§ 2173.01 and 2173.05(g). Contrary to the discussion in the Office Action, the MPEP makes clear that functional limitations are permissible in apparatus claims, provided that such limitations define structure. MPEP § 2114. Moreover, the MPEP instructs that functional limitations that so define structure cannot simply be ignored as the Office Action has done here.

A fundamental principle contained in 35 U.S.C. 112, second paragraph is that applicants are their own lexicographers. They can define in the claims what they regard as their

invention essentially in whatever terms they choose... . Applicant may use functional language... . As noted by the court in In re Swinehart, 439 F.2d 210, 160 USPQ 226 (CCPA 1971), a claim may not be rejected solely because of the type of language used to define the subject matter for which patent protection is sought. MPEP §2173.01.

There is nothing inherently wrong with defining some part of an invention in functional terms. Functional language does not, in and of itself, render a claim improper. In re Swinehart, 439 F.2d 210, 169 USPQ 226 (CCPA 1971). A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. A functional limitation is often used in association with an element, ingredient, or step of a process to define a particular capability or purpose that is served by the recited element, ingredient or step. .... It was held that the limitation used to define a radical on a chemical compound as "incapable of forming a dye with said oxidizing developing agent" although functional, was perfectly acceptable because it set definite boundaries on the patent protection sought. In re Barr, 444 F.2d 588, 170 USPQ 33 (CCPA 1971). MPEP §2173.05(g).

The Office Action attempts to cite IPXL Holdings, LLC v. Amazon.com, Inc., No. 05-1009, -1487 (Fed. Cir. November 21, 2005) in support of its position that functional limitations in apparatus claims are to be ignored. The Office Action selectively quotes IPXL Holdings in a misleading manner and as a result implies that it is relevant to the propriety and effect of

including functional limitations in apparatus claims. The portions of the quoted passage from IPXL Holdings that are omitted by the Office Action inform the reader that at issue in IPXL Holdings was apparatus claim 25 of Gatto U.S. Patent No. 6,149,055, including method limitations:

25. The system of claim 2 wherein the predicted transaction information comprises both a transaction type and transaction parameters associated with that transaction type, and the user uses the input means to either change the predicted transaction information or accept the displayed transaction type and transaction parameters.

The “rule” that IPXL Holdings stated as being “incorporated into the PTO’s MPEP 2173.05(p)(II)(1999)” was that “[a] single claim which claims both an apparatus and the method steps of using the apparatus is indefinite under 35 U.S.C. 112, second paragraph.” IPXL Holdings, p. 12. That is not the case here, and IPXL Holdings therefore is irrelevant. The IPXL Holdings paragraph with the portions omitted by the Office Action reads as follows (emphasis supplied):

**Whether a single claim covering both an apparatus and a method of use of that apparatus is invalid is an issue of first impression in this court. The Board of Patent Appeals and Interferences ("Board") of the PTO, however, has made it clear that reciting both an apparatus and a method of using that apparatus renders a claim indefinite under section 112, paragraph 2. Ex parte Lyell, 17 USPQ2d 1548 (BPAI 1990). As the Board noted in Lyell, "the statutory class of invention is important in**

determining patentability and infringement." Id. at 1550 (citing In re Kuehl, 475 F.2d 658, 665 (CCPA 1973); Rubber Co. v. Goodyear, 76 U.S. 788, 796 (1870)). The Board correctly surmised that, as a result of the combination of two separate statutory classes of invention, a manufacturer or seller of the claimed apparatus would not know from the claim whether it might also be liable for contributory infringement because a buyer or user of the apparatus later performs the claimed method of using the apparatus. Id. Thus, such a claim "is not sufficiently precise to provide competitors with an accurate determination of the 'metes and bounds' of protection involved" and is "ambiguous and properly rejected" under section 112, paragraph 2. Id. at 1550-51. This rule is well recognized and has been incorporated into the PTO's Manual of Patent Examination Procedure § 2173.05(p)(II) (1999) ("**A single claim which claims both an apparatus and the method steps of using the apparatus is indefinite under 35 U.S.C. 112, second paragraph.**"); see also Robert C. Faber, Landis on Mechanics of Patent Claim Drafting § 60A (2001) ("Never mix claim types to different classes of invention in a single claim.").

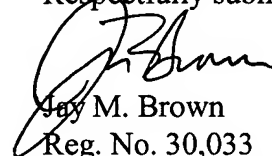
Independent claims 1 and 14 define the composition of the dissipative conductor by a functional expression of the composition's capability to absorb and dissipate high frequency electromagnetic radiation. The portions of Miles and Keri specifically relied on in the Office Action fail to disclose and fail to suggest a semiconductor absorber and dissipative conductor combination configured to dissipate such high frequency electromagnetic radiation. The Declaration Under 37 C.F.R. § 1.132 confirmed that each of Miles and Keri discloses guard rings configured to provide shielding from static electric fields rather than to dissipate high frequency

electromagnetic fields. The Declaration further confirmed that a guard ring configured to dissipate such high frequency electromagnetic radiation would be made of a material with a resistivity higher than typically desired in guard rings for shielding of static electric fields. Hence, the quoted limitation from independent claims 1 and 14 functionally defines Applicants' dissipative conductor as being formed from a composition having a higher resistivity than a conductor that would be desirable in the static electric field shields of Miles or Keri. This clause in independent claims 1 and 14 thus functionally defines a compositional difference between the dissipative conductors of the claimed invention and the guard rings disclosed in the cited references. That compositional difference, which objectively depends on the measurable resistivity of the materials, is a structural difference. It cannot be ignored as the Office Action has done.

#### Conclusion

Since all of the pending claims, as amended, are not anticipated by and are unobvious over the cited references, Applicants believe that this application is now in order for allowance. The Examiner is respectfully requested and invited to contact the undersigned by telephone in order to resolve any remaining issues.

Respectfully submitted,



Jay M. Brown  
Reg. No. 30,033  
The Eclipse Group  
5003 Southpark Drive, Suite 260  
Durham, NC 27713  
(Tel): (919) 313-6161

Customer No.: 51029